Investment Evaluation Summary (IES)

Project Details:

Project Name:	NOCS Distribution System enhancement
Project ID:	00945
Thread:	Operational Support Systems
CAPEX/OPEX:	CAPEX
Service Classification:	Standard Control
Scope Type:	C
Work Category Code:	SCADA
Work Category Description:	IT Software - SCADA
Preferred Option Description:	Implement preferred solution
Preferred Option Estimate (Nominal Dollars):	$8,048,704

	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	27/28
Unit ($)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volume	1	1	1	1	1	1	1	1	1	1
Estimate ($)										
Total ($)	$2,492,939	$1,503,499	$1,680,801	$715,700	$275,961	$275,961	$275,961	$275,961	$275,961	$275,960

Governance:

Project Initiator:	Adrian Merkel	**Date:**	08/04/2015
Thread Approved:	Jason King	**Date:**	06/11/2015
Project Approver:	Jason King	**Date:**	06/11/2015

Document Details:

Version Number:	1

Related Documents:

Description	URL
TasNetworks Policy - Asset Management Policy	http://businesszone.tnad.tasnetworks.com.au/policies/_layouts/15/WopiFrame2.aspx?sourcedoc=/policies/Assets/Asset%20Management%20Policy.docx&action=default&DefaultItemOpen=1
Network Operations Asset Management Plan	http://teamzone.tnad.tasnetworks.com.au/nocs/Procedures%20and%20Processes/NOCS%20Standard%20NS001%20-%20Operations%20Standard.docx

NOCS Standard - Operations Standard	http://teamzone.tnad.tasnetworks.com.au/nocs/Procedures%20and%20Processes/NOCS%20Standard%20NS001%20-%20Operations%20Standard.docx

Section 1 (Gated Investment Step 1)

1. Background

The SCADA (Supervisory Control and Data Acquisition) and associated operational information systems allows operators in a central location to monitor and control electrical assets located around the state via various communications networks. The SCADA information system and electronic schematics are used to manage planned outages through isolating and switching loads, and unplanned outages caused by incidents such as weather, accidents or faults.

1.1 Investment Need

Investment in the NOCS is driven by the need to ensure that the NOCS, which is a key TasNetworks system, is able to continue to meet current requirements and have the capability to accommodate future demands of the power system, the electricity industry and the National Electricity Market (NEM). The program of work encompasses the requirement to manage the lifecycle of the various components employed within the NOCS to ensure reliability, performance, compliance with regulatory requirements and to meet corporate objectives as well as future capacity demands.

As field devices and monitoring equipment become ‘smarter’ the volume of information being captured and processed by the NOCS is constantly growing. This increased information capture enables innovative software and control schemes to be developed and integrated within the NOCS. These ‘smart’ schemes, such as dynamic line ratings, can defer significant capital investment in the power system. Additionally embedded energy generation in the network will place greater demands on the power system’s performance which will likely entail control schemes either embedded into the NOCS or monitored by the NOCS.

1.2 Customer Needs or Impact

TasNetworks continues to undertake consumer engagement as part of business as usual and through the ‘voice of the customer’ program. This engagement seeks in depth feedback on specific issues relating to:

- How prices impact on services;
- Current and future consumer energy use;
- Outage experiences (frequency and duration) and expectations;
- Communication expectations;
- STPIS (Service Target Performance Incentive Scheme) expectations (i.e. reliability standards and incentive payments); and
- Increased understanding of the electricity industry and TasNetworks. Consumers have identified safety, restoration of faults/emergencies and supply reliability as the highest performing services offered by TasNetworks

Consumers also identified that into the future they believe that affordability, green, communicative, innovative, efficient and reliable services must be provided by TasNetworks.

The Network Operations Control System (NOCS) forms an essential part of TasNetworks requirements for the remote control and monitoring of devices under the National Electricity Rules (section 1, clause 4.11). Additionally, TasNetworks has requirements to plan and operate the Network within acceptable levels of Power Quality (PQ) as specified in the National Electricity Rules (schedule 5.1) and relevant Australian Standards.

1.3 Regulatory Considerations

TasNetworks operates in a highly regulated business environment that is continually changing and importantly, it must operate in accordance with a substantial suite of state and national legislation, regulations and industry codes that together act to impose specific compliance requirements on the organisation. The program will further support achievement of the following capital and operational expenditure objectives:

- Remote control and monitoring of devices under the National Electricity Rules (section 1, clause 4.11)
- To plan and operate the Network within acceptable levels of Power Quality (PQ) as specified in the National Electricity Rules (schedule 5.1) and relevant Australian Standards.

2. Project Objectives

The objective of the NOCS enhancement project is to deliver operational information systems and processes which improve the real-time management and visibility of the network. This program will also assist the ‘one business’ strategic goal by providing an operational platform for the whole business.

The objectives of this program are to:

- Improve network visibility at strategic locations;
- Enhance the visibility, access and management of the real time state of the network;
- Consolidate systems to provide a single source of accurate real-time and historical information;
- Sustaining and improving network performance;
- Drive efficiencies in the operation and planning of the network;
- Improve security of operational systems; and
- Introduce base technology to enable real-time online modelling of the power system

3. Strategic Alignment

3.1 Business Objectives

Strategic and operational performance business objectives relevant to this program are derived from TasNetworks 2014 Corporate Plan, approved by the Board in 2014. This program aligns to the following areas of the corporate plan:

- We understand our customers by making them central to all we do;
- We enable our people to deliver value;
- We care for our assets, delivering safe and reliable network services while transforming our business.

3.2 Business Initiatives

The business initiatives that relate to this program are as follows:

Key Performance Indicator	**Performance Measure**	**Project contributions**
Network service performance	Outcomes under service target performance incentive schemes are acceptable	Support power system security outcomes through the following: • Ensure the NOCS has the performance and reliability to respond to network events and control the power system. • Reduced likely hood of unexpected failures through vendor notifications and updates. • Reduce resolution time of software and configuration issues that could degrade the ability of the NOCS to control the power system. • Ensuring the NOCS is patched against critical cyber security vulnerabilities.
Customer engagement and service	Customer net promoter score	The capability of the software systems within the NOCS provides support for all TasNetworks customers.

Sustainable shareholder outcomes	• Corporate reputation and sustainability indices
	• Corporate reputation and sustainability
		• Regular NOCS updates demonstrate TasNetworks capability to be a “fast follower” with implementation of technology that extends the capability of existing systems to keep pace with technology changes and network requirements.
		• Manage compliance obligations under the National Electricity Rules (NER).
		• Support managing business risk for the NOCS
		  ○ Significant failure of NOCS occurs resulting in disrupted power supply and reputation loss to TasNetworks
		  ○ TasNetworks fail to meet AEMO data standards resulting in penalties and financial loss.

4. Current Risk Evaluation

4.1 5x5 Risk Matrix

TasNetworks business risks are analysed utilising the 5x5 corporate risk matrix, as outlined in TasNetworks Risk Management Framework.

Relevant strategic business risk factors that apply are follows:

Risk Category	Risk	Likelihood	Consequence	Risk Rating
Customer	• Fails to comply with NER, and customer agreements affect system operation performance • Failure to comply with rules to manage new connections may lead to disgruntled customers and possible sections by the AER	Unlikely	Moderate	Medium
Financial	• Withdrawal of supplier support • Changes to software licensing terms	Unlikely	Minor	Low
Network Performance	Unreliable operatoinal systems and processes lead to unacceptable outages and reduction in network reliablility and performance	Likely	Moderate	High
Regulatory Compliance	Significant failure of the Network Operations Control System • Security incident causes data leakage or loss of key applications for a extended period • Disruption/Mal-operation of operational systems	Possible	Moderate	Medium
Regulatory Compliance	Unreliable operational systems result in an inability ot effectively support regulatory compliance.	Possible	Minor	Low
Regulatory Compliance	• Non-compliance with the Electricity supply industry act 1995 • Non-compliance with the requirements of the NER • Failure to comply with operating agreements and connection agreements	Unlikely	Major	Medium
Reputation	Unreliable operational systems and processes result in an inability to comply with the company's goals.	Unlikely	Minor	Low
Reputation	Unreliable operational systems and processes result in an inability to achieve compliance with statory, legal and regulatory obligations.	Unlikely	Moderate	Medium
Safety and People	Unreliable operational systems and processes exposes field workers and public to potential accident/injury due to incorrect or mal-operation of network devices	Rare	Major	Medium

Section 1 Approvals (Gated Investment Step 1)

Project Initiator:	Adrian Merkel	**Date:**	08/04/2015
Line Manager:		**Date:**	
Manager (Network Projects) or Group/Business Manager (Non-network projects):		**Date:**	
[Send this signed and endorsed summary to the Capital Works Program Coordinator.]			

Actions			
CWP Project Manager commenced initiation:		**Assigned CW Project Manager:**	
PI notified project initiation commenced:		**Actioned by:**	

Section 2 (Gated Investment Step 2)

5. Preferred Option:

This Investment Evaluation Summary (IES) documents the planned investment required for the distribution portion of the Network Operations Control System (NOCS). The NOCS assets are managed in accordance with the NOCS asset management plan. This plan categorises the different software and hardware utilised within the NOCS environment into a number of groups, the relevant distribution categories are:

- Real-time control systems
- Power quality systems
- Communication infrastructure
- Historian
- Support systems
- Reporting systems

The investment outlined in this document proposes projects to:

- manage the lifecycle of real time operational systems;
- consolidated and integrate a number of disparate operational systems that have arisen due to the recent merger;
- strategically improve visibility, real time analysis and reporting of the power Network to met compliance obligations.

The investments in standard IT hardware and communications equipment components of the NOCS are detailed in separate investment evaluation summaries.

5.1 Scope

The scope of work consists of a number of initiatives that, when implemented, will deliver an integrated fit for purpose Network Operations Control platform that has the capacity and capability to support the whole business. The identified improvements for the period are described below:

- Consolidating and integration projects
  - Historian consolidation
  - Consolidation and enhancement of Logging and Reporting tools
  - Real time Network modelling and GIS integration
  - Outage and Network access management tools
  - Historian and offline modelling tools integration
- Enhancement of existing Application suite
  - Short Term Load Forecasting
  - Switch Order Management
  - Mobile access of real-time state of the Network
  - Real-time network modelling applications
- Improvement of system visibility
  - Strategic Overhead monitoring
  - Improved monitoring of existing metering
  - Implementation of a Mesh network
- Improvement of security
  - Zone substation communications security enhancement
- System lifecycle management
  - SCADA and associated system upgrades, renewals and product lifecycle management

For the 2020/21 to 2026/27 period, appropriate activities and initiatives have not been fully developed and are under consideration.

5.2 Expected outcomes and benefits

The projected outcomes from this program of work are as follows:

- It will ensure continued delivery and operation of fit for purpose real-time operational systems with the capability and capacity to meet business requirements;
- It will support the control system's ability to meet and maintain the regulatory requirements of the National Electricity Rules
- It will provide increased visibility of the real time state of the network across the company.
- It will provide improved and consistent access to historical network information across the company.
- It will support enhanced communication between fault call centres and network operations

The expected benefits from this program includes:

- Improved operational efficiencies and reductions in over-lapping functions
- Improved decision making and planning by increased access to accurate and timely information.
- Enhanced network performance assessment capabilities
- Improved efficiencies and asset utilisation from accurate real-time modelling information of the network
- Improved response times and accurate operational responses to network events.
- Improved safety outcomes with dedicated and reliable remote monitoring and control of the distribution network.

5.3 Regulatory Test

There is no specific regulatory test defined for this program of work.

6. Options Analysis

6.1 Option Summary

Option description	
Option 0	Do Nothing
Option 1 (preferred)	Implement preferred solution

6.2 Summary of Drivers

Option	
Option 0	Continue to utilise the existing mix of platforms of operational software systems. This entails no capital investment in the NOCS and maintains the capacity and capability of the systems as they currently stand. This option provides no lifecycle planning or strategy and runs a high risk of operating insecure software systems that have limited vendor support to control the power system. This option will increase operational maintenance costs and will unlikely provide for future business requirements or regulatory compliance.
Option 1 (preferred)	The drivers for this program are as follows: • ensure continued delivery and operation of fit for purpose real-time operational systems with the capability and capacity to meet business requirements; • support the control system's ability to meet and maintain the regulatory requirements of the National Electricity Rules; • increased visibility of the real time state of the network across the company. • improved and consistent access to historical network information across the company; • comply with relevant legislation, licences, codes of practice and industry standards; • operate assets safetly within prescribed limits and apply dynamic ratins where appropriate; and • enhance network performance; • enhance compliance with regulatory and governance requirements.

6.3 Summary of Costs

Option	Total Cost ($)
Option 0	$0
Option 1 (preferred)	$8,048,704

6.4 Summary of Risk

6.5 Economic analysis

Option	Description	NPV
Option 0	Do Nothing	$0
Option 1 (preferred)	Implement preferred solution	-$8,048,704

6.5.1 Quantitative Risk Analysis

TasNetworks business risks are analysed in accordance the corporate risk matrix, as outlined in TasNetworks Risk Management Framework

6.5.2 Benchmarking

Direct benchmarking against industry peers has not been undertaken.

6.5.3 Expert findings

Not applicable.

6.5.4 Assumptions

The key assumptions include:

- TasNetworks has access to business and system expertise (i.e. internally or externally) with the key skills necessary to support the NOCS team;
- Other TasNetworks and/or external resources are available to assist the NOCS team as required;
- TasNetworks can provide operational and administrative support of the NOCS systems and applications.

Section 2 Approvals (Gated Investment Step 2)

Project Initiator:	Adrian Merkel	**Date:**	08/04/2015
Project Manager:		**Date:**	

Actions			
Submitted for CIRT review:		**Actioned by:**	
CIRT outcome:			